

REMARKS

Applicants' undersigned attorney wishes to thank Examiner Cutler for the courtesies extended to applicants' attorney in the telephone interview conducted with the Examiner on July 16, 2009. In accordance with the discussions during the telephone interview, applicant is submitting the arguments set forth below with respect to independent claims 1 and 6.

The Examiner has rejected claims 1-10 under 35 USC 103(a) as being unpatentable over the Okisu et al. (U.S. Pat. No. 6,571,022) patent in view of the Yoneda, et al. (U.S. Pub. No. 2002/0067416) publication. This rejection is respectfully traversed.

Applicant's independent claim 1 recites an image sensing element manufactured by a plurality of divisional exposure operations such that the image sensing element includes a first light receiving area and a second light receiving area which are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations. Applicant's independent claim 6 recites similar features.

The cited Okisu, et al. and Yoneda, et al. references fail to teach or suggest an image sensing element manufactured by a plurality of divisional exposure operations such that the image element includes a first light receiving area and a second light receiving area. Specifically, the image sensing element of applicant's independent claims 1 and 6 is formed by exposing the image sensing regions to individual masks and thereafter joining these divisional exposure regions into one image sensing element such that each divisional exposure region corresponds to a light receiving area. The divisional exposure manufacturing process is employed because the size of the image sensing element which can be formed in a region is limited and is smaller than the size of a conventional film. The divisional exposure process, thus, allows for manufacture of a larger image sensing element, which can be used in wide-angle photography. An example of an image sensing

element formed by joining a plurality of divisional exposure regions is shown in FIGS. 2A and 2B of applicant's drawings.

The Okisu, et al. patent does not teach or suggest the light receiving areas of the image pickup element being formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations. Instead, Okisu, et al. only teaches that the object image is sensed by two separate image sensors (12 and 13) by an optical beam splitter (11). See, FIGS. 2 and 8. Okisu, et al. makes no mention of a manufacturing process by which the image sensors are formed.

The Yoneda, et al. publication also does not disclose an image sensor which is manufactured by a plurality of divisional operations so as to form first and second light receiving areas. Rather, Yoneda, et al. teaches an image sensor semiconductor chip on which a plurality of image sensing regions (901-904) are formed by a CMOS process. See, Paragraph [0074]. The CMOS process of Yoneda, et al. involves etching of a plurality of integrated circuits on a single semiconductor chip to form the image sensor and does not in any way involve exposing light-receiving regions to individual masks or joining two or more regions to form the image sensor. Therefore, the method of manufacturing the image sensor in Yoneda, et al. is not in any way equivalent to the manufacturing process of forming the image sensor element by a plurality of divisional exposure operations in which each light-receiving area is individually masked and then the areas are joined into one element.

As applicant's undersigned attorney discussed with the Examiner during the telephone interview, the image sensing element of applicant's claims 1 and 6, which is manufactured by a plurality of divisional exposure operations, results in a different physical structure than the image sensing elements of the cited Okisu, et al. and Yoneda, et al.

references. Specifically, Okisu, et al. discloses two separate image sensing elements which are not joined together. The image sensor of Yoneda, et al. constitutes a single substrate with a plurality of integrated circuits etched thereon corresponding to different light receiving areas. In contrast, the image sensor of applicant's claims 1 and 6 includes two separate light receiving areas joined into one element after being exposed to individual masks. The resulting physical structure of the image sensing element formed by a plurality of divisional exposure operations is very different from the physical structure of the image sensing element of Yoneda, et al.

Moreover, Yoneda, et al. teaches that the different image sensing areas (901-904) of the image sensing element correspond to different color regions, with 901 being an R image sensing region, 902 being a G1 image sensing region, 903 being a G2 image sensing region and 904 being a B sensing region. See, paragraph [0053], FIGS. 4 and 7-10. Each image sensing region in Yoneda, et al. receives light from a corresponding image pickup lens (see FIG. 11), so that a color-filtered signal corresponding to the whole image area is output from each image sensing region. In contrast, the divisional exposure operations in forming the first and second light receiving areas of applicant's image sensing element are not performed for each color. Therefore, applicant believes that the image sensing element of Yoneda, et al. is completely different from the image sensing element of applicant's claims 1 and 6.

Accordingly, applicant's independent claims 1 and 6, each of which recites an image sensing element manufactured by a plurality of divisional exposure operations such that the image sensing element includes a first light receiving area and a second light receiving area which are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations, and their respective dependent claims,

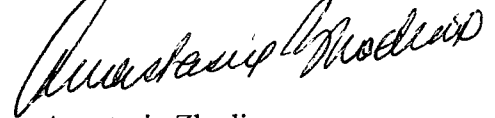
patentably distinguish over the Okisu, et al. and Yoneda, et al. references, taken alone or in combination with one another.

In view of the above, it is submitted that applicant's claims are patentably distinguished over the cited references. Accordingly, reconsideration of the claims is respectfully requested.

Dated: July 27, 2009

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Respectfully submitted,

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